Attorney's Docket No.: 10225-023001

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Jose de la Torre-Bueno Art Unit: 2623
Serial No.: 09/542,091 Examiner: Martin E. Miller
Filed : April 3, 2000
Title : REMOTE INTERPRETATION OF MEDICAL IMAGES

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

Sir:

Appellant herewith files this brief on appeal, in triplicate, to perfect the Notice of Appeal originally filed on March 31, 2003. The sections required by Rule 192(a)(b) follow.

(1) Real Party in Interest

The application is assigned of record to Chromavision Medical Systems, Inc.

(2) Related Appeals and Interferences

There are no known related appeals and/or interferences.

(3) Status of Claims

Claims 21-22 and 27-30 have been cancelled.

Pending claims 1-20 and 23-26 were all rejected, and the rejection of each of these claims is appealed.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

July 31, 2003
Date of Deposit

Signature

Norman Green
Typed or Printed Name of Person Signing Certificate

(4) Status of Amendments

A response was filed on October 10, 2002. This response was entered but found unpersuasive in a Final Action mailed December 31, 2002.

(5) Summary of Invention

Applicant teaches a technique for performing image analysis on an image, e.g., scoring a medical image. Applicant teaches selecting a region on a displayed (decompressed) image generated from a compressed image file (page 4, lines 24-31; Figure 2, block 36), transmitting (separate from the compressed image file) region information identifying the selected region to an image server (page 5, lines 6-16; Figure 2, block 38), and performing image analysis operations on an uncompressed source image file (page 5, line 25 to page 6, line 2; Figure 2, block 42). Applicant's technique provides advantages of transmitting compressed images in a network environment without compromising accuracy in the image analysis.

Medical images may include a large amount of data. Transmitting such images over a network connection may increase network traffic and increase the time in which a remote user can access the images. Compressed medical images contain less data, and may be better suited for transmission in a network environment. The compressed medical image may then be decompressed and displayed at a remote station for viewing by a medical professional. Many compression techniques, e.g., JPEG (Joint Photographic Experts Group), utilize lossy compression algorithms which cause data losses in the decompressed (i.e., restored) image. These data losses may not be noticeable to a

human observer. However, such data losses may affect image analysis operations performed on the decompressed image which are more data sensitive than human visions systems. Thus, compression may reduce the accuracy and efficiency of image analysis operations.

Applicant's technique provides the networking advantages of image compression while retaining accuracy in the image analysis operation by allowing the human user to work on the compressed and subsequently decompressed image, with its unnoticeable losses (page 4, line 24 to page 5, line 15; Figure 2, blocks 36 to 38), and performing the more data sensitive image analysis operation on the more accurate uncompressed ("raw") image stored at the image source, e.g., a network server (page 5, line 25 to page 6, line 2; Figure 2, block 42).

(6) Issues

The issues for appeal are as follows: (1) whether claims 1, 3-15, 17-20, 23, and 25-26 are unpatentable under 35 U.S.C. 103(a) over Novik (U.S. Patent No. 5,432,871) in view of Echerer et al. (U.S. Patent No. 5,740,267); and (2) whether claims 2, 16 and 24 are unpatentable under 35 U.S.C. 103(a) over Novik and Echerer et al. in view of Wood et al. (U.S. Patent No. 5,851,186).

(7) Grouping of Claims

Claims 2-20 and 23-26 rise and fall along with independent claim 1.

(8) Argument

The following references are relied on in the Final rejection:

Novik	U.S. Patent No. 5,432,871
Echerer et al.	U.S. Patent No. 5,740,267
Wood et al.	U.S. Patent No. 5,851,186

Section 103 rejections

Novik does not take advantage of the fact that losses due to image compression techniques may not be noticeable to a human observer. Novik discloses transmitting additional image data from the transmitting station to the remote view station (column 10, lines 38-47). The additional data corrects errors in a field of interest in the decompressed image at the remote view station such that the quality of the image at the remote view station is identical to the quality of the source image at the image server, i.e., lossless. In other words, the image at the remote view station contains all of the information in the source image.[1]

Applicant teaches performing an image analysis operation at the image server and not at the remote view station. This is necessary because the image at the remote view station does not contain all of the information in the source image. This is due to losses sustained in the lossy compression operation performed on the source image prior to transmission. Consequently, any image analysis performed on the image at the remote view station

[1] The Final Action mailed December 31, 2002 states in the "Response to Arguments" section that the image displayed at the remote terminal in Novik may be missing color and brightness information, citing column 7, line 67 to column 8, line 2. However, this is in Block 203 of Fig. 2, dubbed the "quick look" stage (column 7, lines 56-62) and is exactly the type of data corrected for by the difference data sent in Block 211 (column 10, lines 38-47). The quality of the image after Block 211 is "lossless" (column 10, line 45).

may be inaccurate. However, Novik teaches that all of the information in a field of interest selected by a user at the remote view station is transmitted to the remote view station such that the image has the same quality as the uncompressed (lossless) image at the image server (column 11, lines 16-20 and column 10, line 45). Therefore, there is no reason to perform image analysis or image processing operations at the image server. All of the information in the source image has been transmitted to the remote view station and any image analysis or image processing operations can be performed there.

Echerer et al. disclose performing image processing operation on an uncompressed image at a site. Echerer et al. provide no disclosure of selecting a region of interest at a remote site and processing image data at a local site, i.e., where the raw image data is stored.

Neither Novik nor Echerer et al., either alone or in combination, teach or suggest selecting a region of a decompressed, and incomplete, medical image at a remote site and applying image analysis operations to a region of a source medical image at a server site corresponding to the selected region of the decompressed medical image. Accordingly, Applicant submits that the examiner has failed to make a prima facie case of obviousness, and claim 1, and those claims rising and falling with claim 1, should be allowed.

It is improper to combine references where the references teach away from their combination. In re Grasselli, 713 F.2d 731, 218 USPQ 769, 779 (Fed. Cir. 1983).

Novik clearly teaches away from increasing transmission overhead between the image server and the remote view station (column 11, lines 20-25). However, performing image analysis or

image processing operations at the image server would necessarily entail additional transmissions between the image server and the remote view station. For example, the command to perform operations and the types of operations to perform would need to be transmitted from the remote view station to the image server. The results of such operations would then need to be transmitted from the image server back to the remote view station. These additional transmissions are unnecessary when all of the information in the source image is stored at the remote view station and such operations can be performed there. Accordingly, Applicant submits that one of ordinary skill in the art would not combine Novik and Echerer et al. such that image analysis operations are performed at the image server when all of the information in the source image has been transmitted to the remote view station.

Wood et al. merely teaches that medical images can be transmitted over a packet-switched network. Applicant submits that claims 2, 16, and 25 should be allowed with their base claims for the reasons stated above and for their additional limitations.

The brief fee of $160 is enclosed. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: July 31, 2003

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Appendix of Claims

1. A method comprising:

generating a compressed medical image from a source medical image at a first location;

transmitting the compressed medical image to a remote view station at a second location for display;

decompressing the compressed image file;

selecting a region of the decompressed medical image at the second location; and

applying image analysis operations to a region of the source medical image at the first location corresponding to the selected region of the decompressed medical image.

2. The method of claim 1 wherein transmitting the compressed medical image includes transmitting the compressed medical image over a global packet-switched network.

3. The method of claim 1 and further including

transmitting region information separate from the compressed medical image from the remote view station to an image server, wherein the region information defines the selected region of the displayed medical image.

4. The method of claim 3, wherein the region information is a series of pixel coordinates.

5. The method of claim 1, wherein applying the image analysis operations includes outputting a score and communicating the score to the remote view station for display.

6. The method of claim 1 and further including receiving a diagnosis at the first location from the remote view station and associating the diagnosis with the source medical image in a database at the first location.

7. The method of claim 1, wherein selecting the region of the compressed medical image includes receiving input from a pointing device controlled by a user to outline the region of the compressed medical image.

8. The method of claim 1, wherein generating a compressed medical image includes applying a compression algorithm that reduces data losses that are detectable with human vision.

9. The method of claim 8, wherein generating a compressed medical image includes applying a JPEG compression algorithm.

10. A system comprising:

an image server at a first location storing a source medical image;

a remote view station at a second location communicatively coupled to the image server to receive a compressed version of the source medical image, said remote view station comprising a decoder operative to decompress the compressed medical image,

wherein the remote view station includes an input device for selecting a region of the decompressed medical image, and further wherein the image server applies an image analysis operation on a region of the source medical image that corresponds to the selected region of the decompressed medical image.

11. The system of claim 10, wherein the remote view station transmits region information separate from the compressed medical image from the remote view station to the image server, wherein the region information includes a plurality of pixel coordinates outlining the selected region of the compressed image.

12. The system of claim 10, wherein the image server applies the image analysis operations to generate a score and communicates the score to the remote view station for display.

13. The system of claim 10, wherein the image server includes a database associating a diagnosis received from the remote view station with the source medical image.

14. The system of claim 10, wherein the remote view station includes a pointing device controllable by a user to outline the region of the compressed medical image.

15. A computer program, tangibly stored on a computer-readable medium, comprising instructions operable to cause a programmable processor to:

generate a compressed medical image from a source medical image at a first location;

transmit the compressed medical image to a remote view station at a second location for display;

receive at the first location region information from the remote view station, wherein the region information defines a

region within a decompressed medical image generated from the compressed medical image; and

apply image analysis operations to a region of the source medical image at the first location as a function of the region information.

16. The computer program of claim 15 and further including instructions to cause the processor to transmit the compressed medical image over a global packet-switched network.

17. The computer program of claim 15 wherein the region information is a series of pixel coordinates.

18. The computer program of claim 15 and further including instructions to cause the processor to output a score and communicating the score to the remote view station for display

19. The computer program of claim 15 and further including instructions to receive a diagnosis from the remote view station and associate the diagnosis with the source medical image in a database.

20. The computer program of claim 15 and further including instructions to apply a compression algorithm that reduces data losses that are detectable with human vision.

23. A method comprising:

compressing a source medical image at a first compression level at a first location;

transmitting the compressed medical image to a remote view station at a second location for display;

receiving at the first location region information separate from a decompressed medical image from the remote view station, said decompressed medical image generated from the compressed medical image at the remote view station, wherein the region information defines a region of the decompressed medical image;

applying image analysis operations to a region of the source medical image corresponding to said region of the decompressed medical image at the first location; and

compressing said region of the source medical image at a second compression level at the first location as a function of the region information, wherein the second compression level results in less information loss than the first compression level.

24. The method of claim 23 wherein transmitting the compressed medical image includes transmitting the compressed medical image over a global packet-switched network.

25. The method of claim 23, wherein the region information is a series of pixel coordinates.

26. The method of claim 23 and further including receiving at the first location a diagnosis from the remote view station and associating the diagnosis with the source medical image in a database at the first location.